App No.: 09/994,173   Docket No.: 404302000700

Replacement Sheet
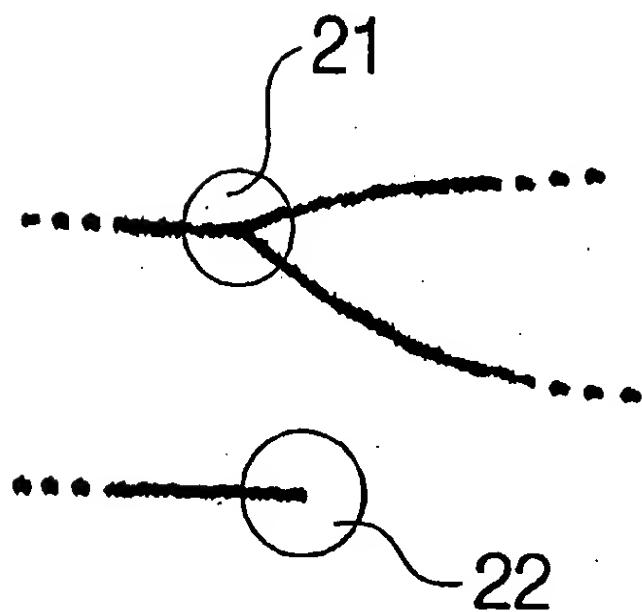
Inventor: Jun S. YOON et al.
Title: METHOD FOR EXTRACTING FINGERPRINT FEATURE
        DATA USING RIDGE ORIENTATION MODEL
        REPLACEMENT SHEET

21

22

PRIOR ART

Fig.1a

23

24

PRIOR ART

Fig.1b

App No.: 09/994,173   Docket No.: 404302000700
Inventor: Jun S. YOON et al.
Title: METHOD FOR EXTRACTING FINGERPRINT FEATURE
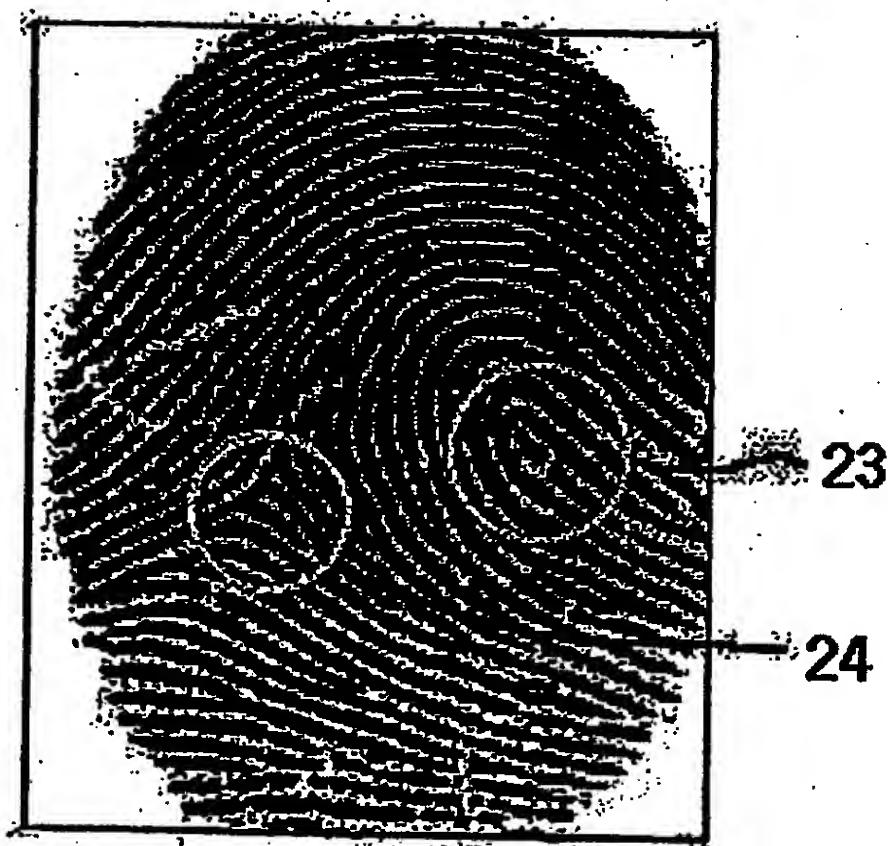 DATA USING RIDGE ORIENTATION MODEL
 REPLACEMENT SHEET

Replacement Sheet

```
              ┌──────────────────┐
              │      START       │
              └──────────────────┘
                       │
                       ▼
      ┌─────────────────────────────────┐
      │  ACQUIRE FINGERPRINT  IMAGE      │── 11
      └─────────────────────────────────┘
                       │
                       ▼
      ┌─────────────────────────────────┐
      │  EXTRACT AND CORRECT RIDGE       │── 12
      │  ORIENTATION                     │
      └─────────────────────────────────┘
                       │
                       ▼
      ┌─────────────────────────────────┐
      │  BINARIZE USING INFORMATION      │── 13
      │  ACCORDING TO ORIENTATION        │
      └─────────────────────────────────┘
                       │
                       ▼
      ┌─────────────────────────────────┐
      │     PERFORM THINNING             │── 14
      └─────────────────────────────────┘
                       │
                       ▼
      ┌─────────────────────────────────┐
      │  EXTRACT POSITIONS               │── 15
      │  AND DIRECTIONS OF MINUTIAE      │
      └─────────────────────────────────┘
                       │
                       ▼
              ┌──────────────────┐
              │       END        │
              └──────────────────┘
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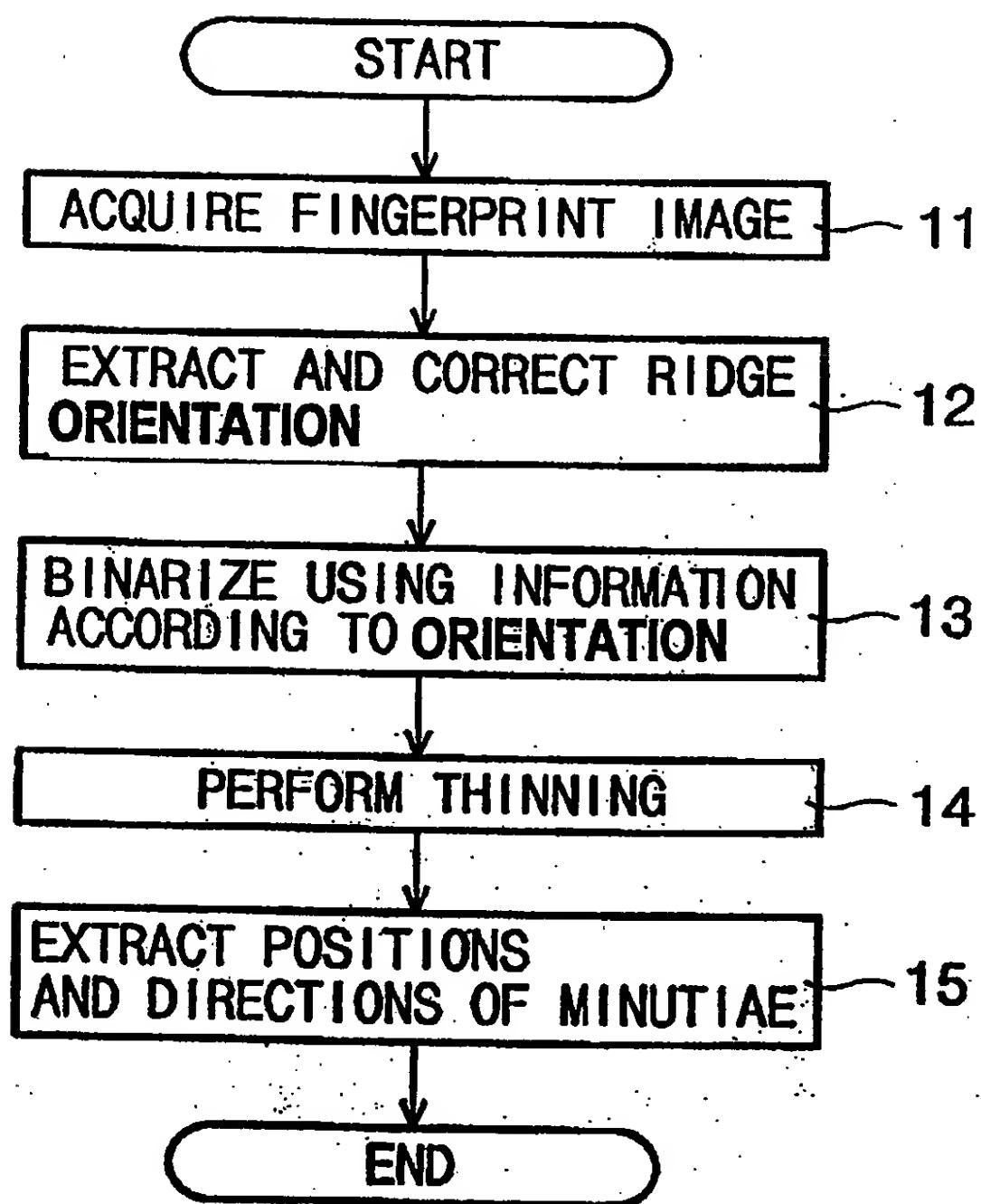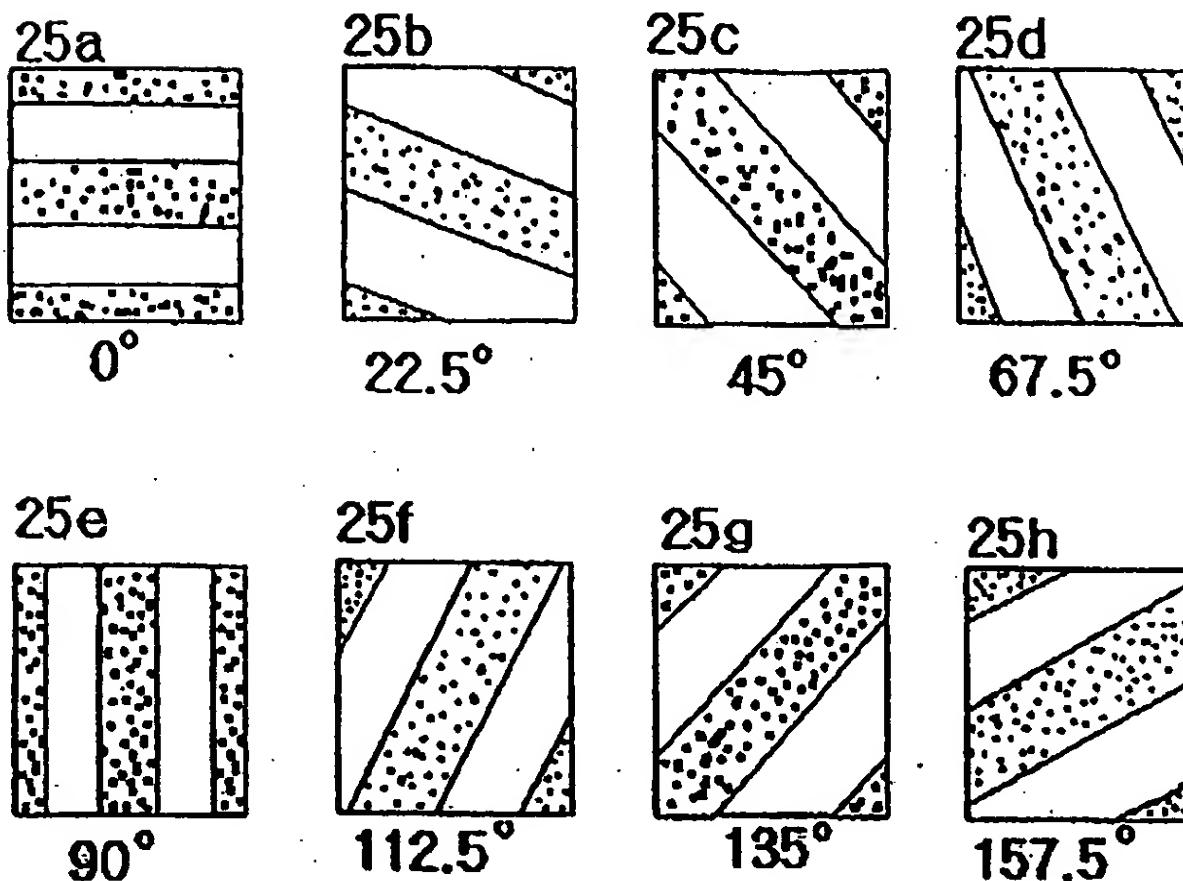
Fig.2

PRIOR ART

App No.: 09/994,173   Docket No.: 404302000700
Inventor: Jun S. YOON et al.
Title: METHOD FOR EXTRACTING FINGERPRINT FEATURE
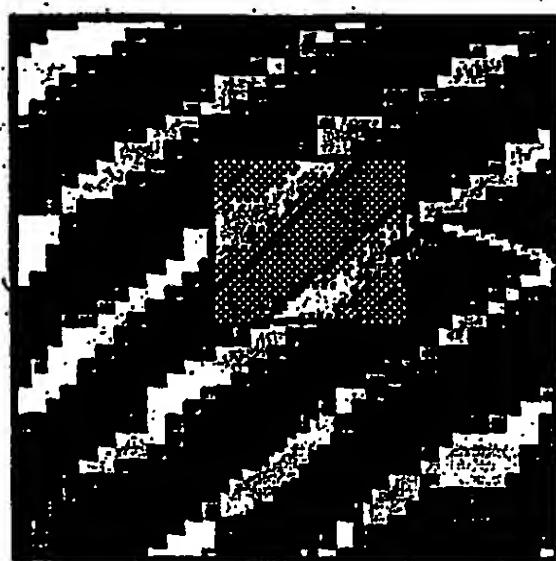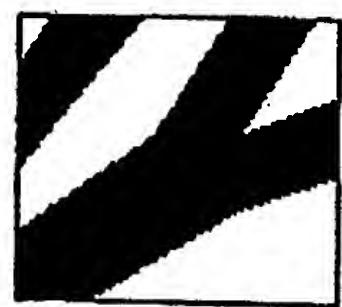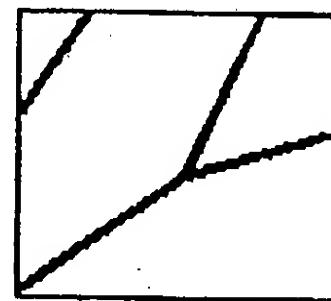DATA USING RIDGE ORIENTATION MODEL
REPLACEMENT SHEET

Replacement Sheet

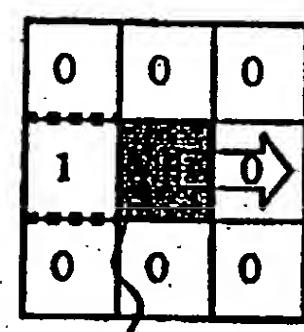| 25a	25b	25c	25d
0°	22.5°	45°	67.5°

25e	25f	25g	25h
90°	112.5°	135°	157.5°

REGION WITH NEGATIVE COEFFICIENT VALUE
REGION WITH POSITIVE COI

PRIOR ART

Fig 3a

25h

PRIOR ART

Fig 3b

BEST AVAILABLE COPY

BINARIZED IMAGE   THINNED IMAGE

■ RIDGE

□ VALLEY

Fig. 4
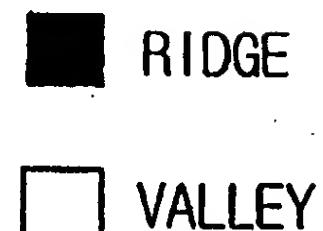
PRIOR ART

ENDING POINT   BIFURCATION
    (a)   (b)
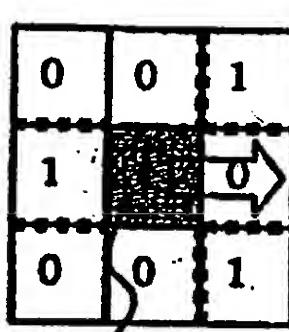
| 1 | : RIDGE

| 0 | : VALLEY

⇨ : RIDGE DIRECTION

▪▪▪▪▪ :
PART WITH TRANSITION
FROM 0 TO 1, OR FROM 1 TO 0

Fig. 5

PRIOR ART